

Gabriele Dragotto

Data X Fellow and Postdoctoral Research Associate

Department of Operations Research and Financial Engineering,
Center for Statistics and Machine Learning,
Princeton University

325 Sherrerd Hall, Princeton, NJ 08544, USA

gdragotto@princeton.edu 

dragotto.net 

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Education

Ph.D. in Mathematics | Polytechnique Montréal

Montréal, Canada

Canada Excellence Research Chair in Data Science for Real-time Decision-Making, Gerad and CIRRELT

Jan 2019 – Feb 2022

Thesis: “[Mathematical Programming Games](#)”

Best Thesis Award 2022 - Département de mathématiques et de génie industriel

Advisor: Dr. [Andrea Lodi](#)

B.Sc in Engineering and Management | Politecnico di Torino

Torino, Italy

Department of Management and Production Engineering

Sep 2015 – Mar 2018

Thesis: “[Introducing Fairness and Diversification in WTA and ATP Tennis Tournaments Generation](#)”

Scholarship: [Giovani Talenti](#) (top 2% university-wide)

Graduated ahead (a semester) of the standard schedule

Erasmus Scholarship: [Tampere University of Technology](#), Finland

Experience

Postdoctoral Research Associate, 2023 [Data X](#) Postdoctoral Fellow, Lecturer | Princeton University

Princeton (NJ), U.S.

Department of Operations Research and Financial Engineering and Center for Statistics and Machine Learning

Sep 2022 – Pres.

Associated with the Department of Electrical and Computer Engineering

Lecturer for the Center for Statistics and Machine Learning

Funded by the [Metropolis Project](#) (2022) and the [CSML Data X Project](#) (from Sept. 2023)

Advisors: Dr. [Bartolomeo Stellato](#) and Dr. [Jaime Fisac](#)

Researcher | Polytechnique Montréal

Montréal, Canada

Canada Excellence Research Chair in Data Science for Real-time Decision Making

Mar 2022 – July 2022

Co P.I. of “Game-Theoretic Security Posture Modeling for Cloud Applications” with Ericsson Canada Inc.

Provisional US Patent and Invention Disclosure - Main inventor

Industrial funding awarded: 50.000 \$CAD

Visiting Researcher, Spring 2022 - Cornell Tech (USA)

Assistant Researcher | Politecnico di Torino

Torino, Italy

Department of Management and Industrial Engineering

Apr 2018 – Dec 2019

Project: “Models and Algorithms of Mathematical Programming and Artificial Intelligence for problems of Combinatorial Design”

Advisors: Dr. Federico Della Croce and Dr. Fabio Salassa

Project Manager: Salesforce CRM, ERP systems, Asana Performance Evaluation
Founder of [Cean Color](#), a creative department now employing 10+ people
Organizer of the [Google Startup Weekend Retail Torino 2016](#)
Creator of [CEAN360](#) for iOS

Data Collection Manager - Small and medium-sized stores

Awards, Prizes, and Grants

- PDC Fall Seminar Series 2022 Winning Speaker Jan 2023
Princeton Postdoctoral Council - Princeton University
- Best Thesis Award 2022 - Département de mathématiques et de génie industriel Feb 2023
"Mathematical Programming Games" - Polytechnique Montréal
- The 2023 Data X Postdoctoral Fellowship - Center for Statistics and Machine Learning (CSML) 2023
"Multi-agent Data-driven Decision-making" - Princeton University
- Doctoral Excellence Scholarship 2021-2022
CIRRELT (Canada)
- Best Presentation Award - "When Nash meets Stackelberg" Feb 2021
AIRO Young - the young chapter of the Italian Operations Research Society (AIRO)
- Poster Finalist, Travel Award - "When Nash meets Stackelberg" May 2020
Mixed Integer Programming Workshop
- Erasmus Scholarship 2017
Politecnico di Torino and Tampere University of Technology
- "Giovani Talenti" Scholarship 2015-2018
Politecnico di Torino

Industrial Grants

- Assortment Optimization (P.I.) 2022
[Gruppo PAM S.p.a.](#)
- Game Theoretic Security Posture Modeling for Cloud Applications (co-P.I. \$50.000 CAD) Mar-Sept 2022
[Ericsson Canada Inc.](#)

Patents and Intellectual Property

- Game Theoretic Security Posture Modelling for Cloud Applications (Provisional, Main Inventor) Jan 2023
[Ericsson Canada Inc.](#)

Publications

Pre-prints and Submitted Manuscripts

- Aloïs Duguet, Margarida Carvalho, Gabriele Dragotto, and Sandra Ulrich Nogueira. *Computing Approximate Nash Equilibria for Integer Programming Games*. 2023
- Gabriele Dragotto, Haimin Hu, Jaime Fernández Fisac, and Bartolomeo Stellato. *Who Plays First? Optimizing the Order of Play in Stackelberg Games with Many Robots*. 2023
- Gabriele Dragotto and Bartolomeo Stellato. “Differentiable Cutting-plane Layers for Mixed-integer Linear Optimization”. In: *arXiv abs/2311.03350* (2023)
- Gabriele Dragotto, Amine Boukhtouta, Andrea Lodi, and Mehdi Taobane. “The Critical Node Game”. In: *arXiv abs/2303.05961* (2022). (Provisional Patent)
- Margarida Carvalho, Gabriele Dragotto, Andrea Lodi, and Sriram Sankaranarayanan. “The Cut and Play Algorithm: Computing Nash Equilibria via Outer Approximations”. In: *arXiv abs/2111.05726* (2021)

Journal Articles

- Margarida Carvalho, Gabriele Dragotto, Felipe Feijoo, Andrea Lodi, and Sriram Sankaranarayanan. “When Nash Meets Stackelberg”. In: *Management Science (forthcoming)* (2023)
- Gabriele Dragotto and Rosario Scatamacchia. “The Zero Regrets Algorithm: Optimizing over Pure Nash Equilibria via Integer Programming”. In: *INFORMS Journal on Computing (forthcoming)* (2023)
- Margarida Carvalho, Gabriele Dragotto, Andrea Lodi, and Sriram Sankaranarayanan. “Integer Programming Games: A Gentle Computational Overview”. In: *INFORMS Tutorials in Operations Research (forthcoming)* (2023)
- Federico Della Croce, Gabriele Dragotto, and Rosario Scatamacchia. “On fairness and diversification in WTA and ATP tennis tournaments generation”. In: *Annals of Operations Research* 316.2 (Sept. 2022), pp. 1107–1119. ISSN: 0254-5330, 1572-9338
- Fabio Salassa, Gabriele Dragotto, Tommaso Traetta, Marco Buratti, and Federico Della Croce. “Merging Combinatorial Design and Optimization: the Oberwolfach Problem”. In: *Australasian Journal of Combinatorics* 79.1 (2021), pp. 141–166

Conference Proceedings

- Stefan Clarke, Gabriele Dragotto, Jaime Fernández Fisac, and Bartolomeo Stellato. “Learning Rationality in Potential Games”. In: *IEEE Conference on Decision and Control (CDC)*. 2023

Technical Reports

- Gabriele Dragotto, Sriram Sankaranarayanan, Margarida Carvalho, and Andrea Lodi. “ZERO: Playing Mathematical Programming Games”. In: *arXiv abs/2111.07932* (2021)

Selected Talks

A partial set of slides is available at <https://dragotto.net/publications>.

- Rutgers Management Sciences and Information Systems Seminar | Rutgers University, USA Feb 2024
Tutorial: Integer Programming Games, a Gentle Computational Overview
- INFORMS 2023 | Phoenix, USA Oct 2023
Tutorial: Integer Programming Games, a Gentle Computational Overview
- INFORMS 2023 | Phoenix, USA Oct 2023
Who Plays First?

- Algorithmic Optimization (ALOP) Colloquium | *University of Trier, Germany* *Jul 2023*
Learn-and-Play: Data, Agents, and Interactions
- Operations Research Days | *Politecnico di Torino, Italy* *Jul 2023*
Integer Programming Games: What, Why, and How?
- 13th Day on Computational Game Theory | *Vrije Universiteit Amsterdam, Netherlands* *June 2023*
Integer Programming Games: Do You Really Need Them?
- SIAM Conference on Optimization | *Seattle, USA* *May 2023*
Learn-and-Play: From Data to Complex Interventions
- Games, Learning and Networks | *IMS-NUS, Singapore* *Apr 2023*
Learn-and-Play: From Data to Complex Interventions
- Dagstuhl Seminar “Optimization at the Second Level” | *Schloss Dagstuhl, Germany* *Nov 2022*
Integer Programming Games (and Robust Optimization)
- INFORMS 2022 | *Indianapolis, USA* *Oct 2022*
Mathematical Programming Games
- Princeton Optimization Seminar and ECE Korhammer Seminar Series | *Princeton University, USA* *May 2022*
Mathematical Programming Games
- EURO 2021 | *University of West Attica, Greece* *Jul 2021*
On Mixed-Integer Programming Equilibria
- AIRO Young 2021 | *Università Federico II (Virtual), Italy* *Feb 2021*
When Nash Meets Stackelberg
- Mixed-Integer Programming Workshop 2020 | *Rutgers University (Virtual, Oral Poster)* *May 2020*
When Nash Meets Stackelberg
- Aussois Combinatorial Optimization Workshop 2020 | *Aussois, France (Oral Pitch)* *Jan 2020*
When Nash Meets Stackelberg
- Optimization Days 2019 | *HEC Montréal, Canada* *May 2019*
The Oberwolfach Problem
- EURO 2018 | *Universitat de València, Spain* *Jul 2018*
On fairness and diversification in WTA and ATP tennis tournaments generation

Teaching

SML310 - Research Projects in Data Science | Princeton University

Center for Statistics and Machine Learning - 12 Students

Princeton, NJ, USA

Fall 2023 - Winter 2024

Lecturer

MTH6404 - Integer Programming | Polytechnique Montréal

Department of Mathematics and Industrial Engineering - 35 Students

Montréal, Canada

Winter 2021

Design of quizzes, exams, counseling, and grading

Elective High-school course: a primer on selected topics, joint with CEAN S.p.A.

Lectures available [lectures](#)

Advising and Mentoring

- Stefan Clarke (Ph.D. candidate) | *Princeton University*, USA Fall 2022 - Pres.
Project: *Multi-agent Optimization*
- Aloïs Duguet (Ph.D. candidate) | *Laboratory for Analysis and Architecture of Systems*, France Fall 2022 - Pres.
Project: *Approximate Nash Equilibria in Integer Programming Games*
- Matthew Dwight Houston (B.Sc. student) | *Polytechnique Montréal*, Canada Summer 2021
Project: *A multi-leader multi-follower model for vaccine trades in the pandemic*

Mentoring

- Two Undisclosed Ph.D. Students | *MyPhDMentor*, *Comitato Dottorato*, Italy Fall 2022 - Pres.

Service

Societies	Mathematical Optimization Society (MOS), Institute for Operations Research and Management Science (INFORMS), Society of Industrial and Applied Mathematics (SIAM)
Review	Mathematical Programming, INFORMS Journal on Computing, International Conference on Integer Programming and Combinatorial Optimization (IPCO) 2023, European Journal on Operations Research, AAAI 2023, Automatica, Learning for Decision and Control (L4DC) 2023, Annals of Operations Research, Information Systems and Operational Research
Conferences	DS4DM Coffee Talks , Founder and Organizer (2021-2022) MAPSP 2022 - The 15th Workshop on Models and Algorithms for Planning and Scheduling, Organizing Committee DS4DM Workshop 2022 - Workshop on Data-Science for Real-time Decision-making, Organizing Committee

Languages and Coding

Languages	Italian (native), English (fluent), German (Elementary), and French (Elementary)
Coding	Bash, C++, CSS, HTML, Javascript, Java, Julia, Lua, Python, PHP, SQL

Activities

Volunteering	TEDxTorino co-presenter (<i>Jan 2018</i>), Area_G Torino, MyPhDMentor - Comitato Dottorato
High-school Service	Introduced the Student Union Fund (raised more than 5000€), introduced and set up common student lounges, organizer of fundraising events , founder of M1 Online (Student e-newspaper), developer of the iOS and Android App, school website's developer
OpenSource Education	My lecture notes are available online

Press

- La Stampa, National Frontpage | [“Politecnico finds the Tennis’ algorithm”](#)

Apr 2018

- MATEPrism, Bocconi University, Italy | [“The Mathematics of Tennis”](#)

Apr 2018

- La Repubblica, D, Italy | “20 Successful 20 Years Old”

May 2016